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HOW IS THE ARMY MODERNIZING?

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P R O C E E D I N G S

MR. O'HANLON: Good morning, everyone. Welcome to Brookings on this beautiful first day of fall. Not so beautiful for the Redskins but beautiful for me because I get to host my friend, Lieutenant General Eric Wesley, who as you know is the Deputy Commanding General of Army Futures Command and also has roles within future concept development and he is based in Fort Eustis. The Army Futures Command of course is in Texas but you guys are building a whole new enterprise around the country.

Just a quick word of additional introduction for John Wesley and then we are just going to have a conversation for about the first half and then involve you for the second half, if that's alright. He is part of -- a couple of years ago, people talked about the Marine Corps takeover of Washington with John Kelly and Jim Mattis and Joe Dunford. Now we are talking about the class of '86 West Point takeover with Secretary Esper, Secretary Pompeo and General Wesley.

GENERAL WESLEY: Some of us are just slackers, you know, and others move on.

MR. O'HANLON: He finished his studies there at that time. He's had other studies and degrees, but he's also deployed quite frequently in operations or in combat including to the Balkans in the 1990s, to Iraq for Operation Iraqi Freedom and also to Afghanistan most recently on a couple of separate tours there. He's an Army officer by training which means that he's been thinking about technology and the future of these big 70 ton behemoths that we call tanks and other such things that naturally come up in thinking about the Army and its future so if you wouldn't mind in joining me in welcoming General Wesley, please, to Brookings. (Applause)

And I thought the easiest way, General, to start this conversation, since we are here to talk about multi domain operations and the Army modernization strategy, which

are specific phrases, slogans, bureaucratic efforts that are in the larger context of how should the Army respond to new opportunities and new risks, I wonder if you could just sort of trace through the evolution of how this came to be. This concept, and then we'll get into the details of what it actually is but what problem is it trying to solve, what are its roots in sort of the recent 10-year past?

GENERAL WESLEY: I am glad you opened with that, Michael. The idea of solving problems is what really drives the best innovation. You hear a lot of people talking about you need to be more innovative but absent a problem to solve, rarely do you find the right innovation that you are looking for so what problem are we trying to solve in the Army?

You've heard recently a lot of talk about great power competition, national fence strategy talks about the return of great power competition and for most of us in this room, in our adult life, we've enjoyed a period where problems posed by near peers or adversaries have not adversely affected the United States, our partners and allies' ability to influence the world on behalf of our national security interest but we find that's changing and so what has changed.

I think that you've got a China that has experienced an unprecedented era of economic growth, the likes of which we have never experienced. On the Russia side, this idea of revanchism, to return to the era that they knew where they had esteem and wanting to reestablish the near-abroad. And then they watched us over the 1991 and 2003 and they recognized that they had a problem so there are three areas our adversaries have invested that have posed a problem for us. The first is we are challenged in all domains. When I say all domains, I mean space, the electromagnetic spectrum in cyber, maritime, air, ground and those domains are challenged, that's different for us because we've enjoyed about 30 years where we could do almost anything we wanted uninhibited and how you fight will change if those domains are challenged. If you have universal communications all the time, you are

going to behave differently than if you don't have communication for extended periods.

If you control the airspace at free will, you are going to be behave differently than if you are vulnerable from the sky. All that is changing now. That's a tactical problem that we deal with. The second area where we find that our adversaries have invested is they've invested in multiple layers of standoff.

I said they watched us in '91 and 2003 and I think what our adversaries have concluded is they want to part of closed combat with United States, our partners and our allies. So what do you do? You invest in ways to keep the United States and their partners and allies away from their interest which is no surprise that China has invested in islands in the South China Sea. It's no surprise that Russia has invested in integrated air defense and what we call anti-access aerial denial.

And then the third area that we've got a problem is this idea of our adversaries having the ability to leverage the competition space to achieve their objectives left of conflict. You hear about gray zone activities, active measures, any number of ways you can describe it, but we are challenged by this notion because of our cultural roots. We don't find it attractive when the national security apparatus is spending time aggressively left of conflict because we don't believe we are warfighting people in our DNA, so we struggle competing left of conflict but that's where I think our adversaries have seen our Achilles' heel and where they are achieving their objectives. So those are the three problems that we seek to solve.

MR. O'HANLON: That's a great conceptual framing and now General, if I could, I want to stay on the same subject and line of inquiry but get a little bit more concrete and specific because as you and I were speaking, we know that these kinds of attempts at big new innovation that combine different operational concepts with new technologies, with new strategic realities, they have a long history and we were talking about air land battle

back from the 70s and 80s, then the Army started to struggle with his Army after next concept in the 90s and the cancellation ultimately of some of the systems associated with that, like the future combat system. Then we also heard the joint force talking about joint vision 2020, joint vision 2030 and then since 2012, we went to President Obama's defense strategic guidance, HR McMaster's Army Operating concept in a similar kind of role to what you are doing now and then still in the Obama Administration, the third offset that secretary worked, General Salva and others are associated with, which seems to have continued in some ways but now there are some new names associated with that which is natural in a political world but I wondered how you would explain what MDO is in the context of all those previous efforts, especially the ones that came since 2014. We were already worried about great power competition, but you've clearly seen the need to do something further, something bigger, something more bold and innovative so I'd just love to hear more concretely and specifically what is MDO relative to, let's say, the third offset.

GENERAL WESLEY: Well first, at the expense of maybe sounding a little bit wonky, I'd like to talk a little about what a concept is. You know, we all know what a concept is, small c, but in the Army and the services, we talk about concepts and it's important to distinguish the difference between that and doctrine. Doctrine describes how we operate with the capabilities we have now and the talent we have now.

Concepts describe what we must become based on the problems that we anticipate so it's an azimuth that we want -- it's a target that we see ourselves moving towards in the future. It's a forcing function that drives the institution to change. That's probably the most important -- it's a forcing function to drive the institution to change and by the way, it's not just a forcing function for material development, it's holistic change across the floor so Michael described Air and Land Battle. That was published in 1981. There was a concept that proceeded Air Land Battle, interestingly, it was called active defense and

these are theories that help you solve the problem but oftentimes, concepts don't last because they are either proven ineffective, or inefficient or not achievable.

Initially, a good concept is infeasible now but it drives you to invest in something so an active of defense was published in the 1970s, General Starr became the fifth corps commander in Europe and found that it didn't solve the problem of the numbers that we would expect from the Soviets to come across the border in the folded gap.

So we came back to become the TRADOCK commander here in the states and he said "Active Defense doesn't work." We need an approach to fight outnumbered and win and the byline of fight outnumbered and win and defeat the second echelon simultaneous to the first was that really the crux of what Air Land Battle was and it drove us to change everything. It drove us to invest in the big 5 material development.

It drove us to invest in new training centers. It gave us more space. It changed our professional military education so it was a holistic modernization that ensued from the description of a concept.

MR. O'HANLON: Thank you. I don't want to interrupt. Were you about to go on?

GENERAL WESLEY: I would just say not all concept come to fruition so force 21 in the 90s really wasn't a fundamental change. It described digitization. The 2014 document probably didn't go far enough because really we were coming to grips with a new era. My only point to finish would be we think multi-domain operations is akin to the relevance of Air Land Battle 1981 so it is the most fundamental rewrite on how we will fight in the future and will drive our modernization in the years ahead.

MR. O'HANLON: By the way, there're three seats up here if anybody wants to sit down and be our guests.

GENERAL WESLEY: We will call on you first.

MR. O'HANLON: Yeah, exactly. I wondered if you could, to the extent that it's possible for a concept, which, like you said, by definition is a little earlier and a little more conceptual, a little more intellectual if you will. If you could still nonetheless point towards specific kinds of weapons or other technologies or concept for specific tactics or operations that you see being boosted, facilitated by this effort.

So for example, we hear a lot of talk about hypersonic weapons these days, maybe that's one of the -- and I think Secretary Esper, when he was here at Brookings as Secretary of the Army talked about that as a big concept. There are other such concepts as well or other such technology specific tangible real things. Is there anything you would counsel us to take note of because I also see that the budgets still have modernization for the M1 tank and still have lots of the big 5 helicopter programs in them so how much has the Army already changed?

Maybe it's unfair to ask if you're more of an R and D and conceptual place than a hardware developer but what do you see at least on the horizon as exciting new technologies that then could be married up with new doctrines and really help us in future conflict?

GENERAL WESLEY: Okay, so let's go back to the problem. Remember, as I said, one of the big problems is these multiple layers of standoff. Imagine, if anybody is a boxing fan, you are fighting Evander Holyfield, who is renowned for his reach and if you are going to fight Evander Holyfield, you need to do two things: you need to have a good stance, you need good posture and you need to be able to penetrate that reach in order to make your strike.

It's no surprise that the number 1 material modernization requirement or program that we are pursuing, relative to the problem I just described is long range precision fires so hyper sonics is an example, the milli gun, as we affectionately call it but the ability to

reach out and touch at extended ranges. If are going to reach out and touch at extended ranges with long range precision fires, that imposes another challenge for you. You need to be able to have the sensors to identify targets so the idea of incorporating lower to orbit satellites, et cetera in order to help us target with long range precision fires. Those are two examples that I might describe. There are others.

MR. O'HANLON: That's great. The Army has these six different bins of technology that it talks about in the NDO context, although I am never quite sure how much they overlap. You just explained a couple of specifics. We also talked about the future of vertical lift, equipping the soldier, missile defense, cyber defense in the network so I think I am near the end of the big six with what you want discussed. Thank you. Are there some areas where you are finding it's frustratingly slow going where not so much you necessarily but the broader state of R and D in the United States on advanced technologies is going to make it hard for let's say two or three or four of these six -- across functional teams and concepts, make it hard for a couple of them to progress the way you would like.

GENERAL WESLEY: Yeah, I'll mention two as examples. One that fits in the category of technology that we've never experienced but know the merits of and another category of trying to break out of our past and trying to move forward so the first category, we think that artificial intelligence will be imperative in order -- not when we are thinking about robotics necessarily but to augment human decision making so when you've got a very hyperactive environment with a myriad of countless targets and the need to incorporate all the weapons systems of the joint force, the Air Force, the Navy and you're trying to integrate all five domains, all of which are controlled by a different echelon or by a different service.

The need to be able to respond rapidly with the right weapon system at the right time will only best be achieved by the use of significant combat cloud or data leak that

then can be -- you can apply artificial intelligence to prioritize targeting.

So getting -- there is a lot of talk on machine learning but the ability to take weapon systems and integrate them on the battle field using artificial intelligence is the next big problem and we have -- we completely agree with the Air Force that the next joint program that will be most important for multi-domain command controls artificial intelligence.

The one that -- when we want to extract ourselves from the past -- if anybody read the exploits of Napoleon, for example, one of this biggest challenges were lines of communication. That remains a challenge to this day and we -- you mentioned the A1 Abrams which consumes fuel at a rate that not many weapons systems can compare to so how is it that we extricate ourselves from the industrial age notion of continual flows of fuel that was all germane to the automotive revolution and the idea of maybe leveraging hybrid electric tower so we can cut the ties of our long, significant logistics chains which make us vulnerable to targeting so those are two areas that I think we've got to push on. Artificial intelligence, hybrid electric power or alternative power source.

MR. O'HANLON: Great, and the next question as we sort of work through this, which I forewarned you about because I told you it's going to be a little bit of a skeptical question of multi-demand operations. When I look back at some of the different slogans or frameworks or concept that have been developed over the years -- we talked about Air Land Battle, that was pretty good. Army after next, maybe not so good. Net centric warfare that the late Admiral Cebrowski talked about, among others, that was probably good but I am not really clear what it made happen that wouldn't have happened anyway.

It sort of was a reflection of where we were in history in that moment --

GENERAL WESLEY: Right.

MR. O'HANLON: More than it was a big new impetus for development. I can go through these different slogans and different issues over the years but the point

remains that -- and one more I guess. We talked about Air Sea Battle, less with the Army, more with the Air Force and Navy then they decided it was either politically incorrect or too much Air Force Navy or something so then they turned it into the joint concept for access and maneuver in the global comments. I think I got that right but if you don't remember, then that's sort of the point, which is that they sort of killed the idea by burying it in a long phrase but clearly, some of the things in there in the sea battle are still alive and well as well as some of the things in the Army operating concept and various previous incarnations of this sort of conversation so my question is how do you make sure that multi-demand operations really gets us some place meaningful and it's targeted enough to take advantage of specific opportunities, address very specific problems and not try to be all things to all people.

GENERAL WESLEY: Yeah, thanks, Michael. Two points I'd made. The first is that the fact is that concepts are always changing and it's actually a good thing because it reflects thinking. You are never going to predict the future with perfect clarity. We do the best we can. I wouldn't say any of these concepts are ever failures. We perceive them as such because they go away and we presume that they weren't useful because they went away. The reason they go away is because oftentimes we learned from the concept that went before us and then we illuminated more on a subsequent concept so that's why you see concepts come and go.

Now some have significant traction like we describe with Air Land Battle. What makes this different? How do we know that this is not all things to all people? The first is I think we've been very clear on some very tangible problems that must be solved that absent solving them -- absent solving them we will see the influence of the United States, our partners and allies, weighing in the ensuing years if we don't so there is a serious problem that if we want to continue to be leaders on behalf of our ethics and way of life, we need to solve these problems and they are not germane to the name. They are germane to

the environment and one of the benefits of MDO right now, it is a line to the national defense strategy which I think describes the world as it is. Some other concepts, we would develop ideas on behalf of capabilities that were unclear as to their utility.

We know that what we describe in multi-domain operations -- does anybody think there would be fewer domains in play on the battlefield in 2030? Does anybody believe that the extended range of weapons would get smaller in the ensuing years? So there are some pretty foundational aspects of the way we derived this that I think make these problems reside until they are solved.

MR. O'HANLON: So getting near the end of my questions so please start loosening up and getting ready for your own but I wanted to ask you to specifically preview for us, to the extent you can, the Army modernization strategy, which I think is forthcoming and we built it up a little for this event. I know you wanted to talk about it, even if it is not something you can completely unveil but I think from what you have taught us about the difference between concepts, doctrine, strategies, I can begin to guess what your answer will be to this but how is the Army modernization strategy going to relate to future's command and your work there and multi-demand operations specifically?

GENERAL WESLEY: It really gets down to modernization 101. How do you change an institution as large as the United States Army or even the Department of Defense and so we did describe that the concept is a forcing function to change an institution but absent a modernization strategy which applies -- which defines the ends you're trying to achieve, the means and the resources you are going to go after, absent a strategy that describes a pathway, a roadmap with decisions along the way and trades across the fight up or the POM.

Absent that, then we are just hoping we get there so any good institution that expects to modernize, has to have an accompanying strategy with any concept we

arrive at, otherwise it's just a thought piece. The Army modernization strategy that senior leaders are finishing up and will soon release will be a document that will be the governing tool that the new Army Futures command, the General Murray commands uses to hold the enterprise accountable for their tasks over the course of the next several years because then again, if you are not holding the institution accountable across the varied task that we will have to modernize the Army, then you are just hoping you are going to get there.

MR. O'HANLON: Right, good. So more night court for the future for the Army?

GENERAL WESLEY: There will be more night courts, I am sure.

MR. O'HANLON: Even as we all salute and thank General Dunford and await General Millie as his successor next week and I know a big day of transition at DOD -- but since General Millie had something to do with some of what you are talking about, it may provide continuity or -- we'll have to see, I guess, right? General Millie will be the chairman of the joint chiefs of staff as opposed to the Army Chief of Staff, sometimes, people's perspectives change but I have to assume that your overall feeling here is one of gratification with the former Army Secretary, now the Secretary of Defense. This probably will show up -- some of the ideas you are talking about will probably show up in next year's budget proposal.

GENERAL WESLEY: One would hope.

MR. O'HANLON: I think we'll go to the audience now. I guess we will start with one at a time and just wait for a microphone if you could and identify yourself. We will come all the way to the second row, Sidney to start and then we will work around the room.

GENERAL WESLEY: Sidney is like Ellen at the White House, always gets the first question.

MR. O'HANLON: Yeah, I decided to call on him before I actually saw who it

was because he was so enthusiastic, I just saw the hand but I am delighted to have your questions, as always.

MR. FRIEDBERG: Sidney Friedberg, inevitable and slightly stalkerish Deputy Editor from Breaking Defense. This -- the whole issue of the gray zone, this competition space, it still -- I mean I still struggle and I am probably not alone to figure out what exactly the Army does there and what the joint force does there and what the vast and amorphous interagency does there. I mean are we talking about things -- it seems like everything from debunking fake news, deep fake videos on social media to special forces advising people at a country that's under assault by proxies. Is that indeed the spectrum of things? Where is the line drawn between the competition phase and actually now we are in conflict? Where is the line drawn between the Army's (inaudible) phase and a civilian led piece?

MR. O'HANLON: By the way, if you want, before you answer, we have no rule here at Brookings against promoting our own books so if you want to mention the Senkaku Paradox, my book which tries to speak but I wouldn't mention it. That would be a little rude.

GENERAL WESLEY: So, Sidney, that is indeed the spectrum we are talking about and then some. I, as an analogy, those of you remember the 1992 election, President Clinton was elected, we talked about the war room and the war room was an opportunity to watch the daily news cycle every single day and then to appropriately counter it. If you use that as an analogy of what is happening in the competition space and then some, it's not a bad analogy.

We tend to saddle ourselves with a post-Westphalian behavior in our national security efforts and that is number 1, we allow for understandable reasons the country teams of each of our embassies to lead on messaging throughout any given country

but Europe's got a lot of countries associated with it and the region tends to behave with continuity as opposed to along boundaries called borders so to have the ability for the interagency to include the military, to have a coherent strategy and/or counter approach to the unconventional warfare and information warfare that we see every day, might be something that we want to think about with greater detail but there are -- there's another aspect to this.

If our effort to expand the competition space, which is always intended to force, not only counter their message but to force our adversaries to recalculate their position. If that fails, you are going to find yourself potentially in a conflict and if you want to defeat a Feta-Compley attack, there is certain targeting that you have to be doing every single day that no operational headquarters is doing on the scale -- will have to do it against adversaries so I think to your question on whose role is it, interagency or the military, I think it's the interagency including the military.

The military brings with it capacity in a theatre that maybe the country teams don't have and so you put those things together and the collaborative, cooperative nature of what we are trying to achieve and what we would talk to at the interagency level brings more capability in our ability to counter what they are doing in that gray zone.

QUESTIONER: But sting has no co-coms.

GENERAL WESLEY: No, but they do have regional ambassadors, right? And that could be something that we are able to increasingly collaborate on but to your point, they aren't in theatre, that's for sure but who is? And the military brings capacity to the table and that doesn't meant that the military has to be in the lead, but we certainly can collaborate in way that would aid and enable the efforts of the other agencies.

MR. O'HANLON: Does that mean we need either new structures or we need to bring in people from treasury and USTR and other places into the combatant

command planning cells or is there any kind of structural change in the government that would facilitate this?

GENERAL WESLEY: Yeah, we haven't proposed structural change to the government. It wouldn't be our role but we have described what it takes to win and if you aren't actively engaged in that space, the information space, the targeting space, the cyber space, on a daily basis and there is a coherent command and control mechanism to do that, that organizes those messages, I think you struggle and you put yourself at a disadvantage.

MR. O'HANLON: Great, we'll stay here in the front with Sandy and maybe we will take two at a time this round if you don't mind.

MR. APGAR: Thank you, General, Sandy Apgar, Senior Advisor at CSIS and former Assistant Secretary at the Army for installations. You've understandably, and the Army as a whole, describe modernization, often, usually, in technological terms in one form or another. The question is the degree to which your thinking of the change in relationships between the private sector and the military in managing the non-war fighting infrastructure services facilities in a more businesslike way.

GENERAL WESLEY: In a number of ways, the answer is absolutely yes. We had the opportunity to brief Speaker Gingrich on our concept and one of the things -- very thoughtful in the interaction but he said this is not just an Army concept, it's not just a joint concept, it's not just a whole of government concept, it's a whole of nation concept and to your specific point, I think in order to compete left of conflict, which includes the messaging space, the cyber realm, it will be imperative that we -- and we talked about trade. It would be imperative that we have companies, privately held companies be actively engaged and frankly, I don't think it's helpful when companies like Google self-select out of collaborating with the government in trying to solve some of these very difficult problems. That's on the active, left of conflict efforts I think you're going to have collaboration and

cooperation but even on the technical side, our ability to take a little more risk in order to cooperate and collaborate on what our requirements are I think will be absolutely imperative and I think you are seeing that the structure of Army Futures Command, the reason the Chief of Staff of the Army and the Secretary of the Army stood up Army Futures Command was to have a single point of entry to coordinate some of these efforts.

The reason we have CFTs is to create the opportunities and venues to very specifically share with our industry partners what the problems we are trying to solve are.

MR. O'HANLON: Great, we will stay up here in the front row.

MR. KIM: Thank you, General. My name is Dong Young Kim from Voice of America Korean Service. Now the -- you addressed about the great power competition but in the NDS, they also mentioned about the North Korean threat equivalent to that.

GENERAL WESLEY: They also mentioned what?

MR. KIM: The North Korean threat equivalent to the great power and I was wondering how the future -- how the future command is addressing with -- such as underground terrain as you mentioned about the multi-domain problem. North Korea has a lot of underground trains that would be the big fight on the end and also the recent development of Iskander Type missile as well as you also mentioned about the AI utilization. Now, North Korea is a very secluded nation and the United States relied more are the Humid by South Korea and Humid is a human domain; it's very subjective. How are you going to address this problem while you are utilizing the AI.

GENERAL WESLEY: Yeah, so a couple of things. One of the things that Michael O'Hanlon said earlier is with the concept and modernizing an army, you can't be all things to all people.

So we are going to use this thing called a pacing threat and we really did a lot of the analytics on Russia but it applies to China. We are not designing the army

necessarily against some of the other threats, although we have to be cognizant of them. So you mentioned subterranean, you wouldn't -- based on the design of the future Army, subterranean requirements are not there but when you modernize an army, what you do is you make sure that your investment efforts build the army that gets you to defeat your pacing threat. When you diverge from that, which we have, in many cases for the Korean problem to include significant investments in the sub-t problem, you just have to do that eyes wide open so the Army is accommodated for the Korea problem as an exception to the azimuth that we are building against an adversary.

To your point, you're right, artificial intelligence is not going to be as helpful for you in that conflict but that's not the biggest challenge that we might have and that's a challenge that we deal with every day and I think that we have leadership that is accommodating.

MR. O'HANLON: Another question. The woman here in the sixth row back. Seventh row.

MS. GLADSTONE: Hi, thank you, Kathy Gladstone. Question -- you are talking at a very high level. What are you doing about the people on the lower level? Soldiers, sailors, recruiting, training, educating the military.

GENERAL WESLEY: So thank you for the question. Michael counseled me when I came in, make sure you don't talk on a high level so I haven't hit that mark. Look, there is a number of things I could say here. First of all, I mentioned that when you have a concept, it is a holistic modernization. We will have to fundamentally change again our means by which we educate and how we train because the weapons systems that we will employ will be different. The design of the weapons system have to be intuitive because the change at which technology comes, we need to be able to integrate it into the force very quickly.

A third area is on a hyperactive battlefield, we will find that what we call mission command, but what you would just understand as probably as initiative, independent initiative, will be on a scale that our generation has never seen so we have to -- we are changing the training at the tactical level to encourage the thinking that allows subordinates at very low levels to exploit initiative that they see as opportunities. That takes a very specific training requirement in order to accommodate that. I could think of others but I agree with you 100 percent. All the stuff has to be understood and be usable at the tactical level but I'll give you one final example and I hope I am scratching the itch somewhere in here.

So I said artificial intelligence being able to integrate targets at the operational level, what does that have to do with the scout that's on the reverse slope of a terrain feature. Right now, in the Army I grew up with, that scout would understand what's on the other side of the train feature based on his own organic reconnaissance capabilities. If you can have tactical formations be able to access a combat cloud with an uplink, that is an aided by artificial intelligence applications, you can imagine that an F35 that just flew over 10 minutes ago, which sucks in all kinds of data downloads into a cloud, that that scout, that soldier, can access information from an F35, low earth orbit satellite, et cetera. So now, it becomes very real. What our job is is to translate that right down to the very tactical level so you enhance the individual soldier's capabilities.

MR. O'HANLON: Excellent. Thank you. We will stay here on the fourth row.

MS. FAWS: Good morning, Sharon Faws for Army National Guard. What are the impacts you see of modernization to the guard in reserves, what are some unique touch points that we should be focused on?

GENERAL WESLEY: That's a very good question. A couple of points I'd

mention. The first is I said that posture is important. There are three tenants of multi-domain operations. The first is calibrated force posturing. All calibrated force posture is, it's four things really. It's forward presence, permanent or otherwise. Now if you imagine rotational, that would have implications for the guard having to rotate forward in order to ensure we have the right resources forward. Second, it's expeditionary capacity, the degree to which you don't posture forward, you're going to have to get it to the fight very quickly.

Third, it's this ability to access national assets, which I have already given some examples on and then fourth is authorities to use those assets in the competition space and in the tactical space. Now, I want to share this with you though, as we talk about forward posture, the national defense strategy talks about contact forces forward and blunt forces that come in very quickly. When we lay out the force package in Europe and the force package in Indo-paycom, what we identify is there are a number of units that are right now resident in the guard that we need in the contact layer.

So one of the things that the Chief of Staff I am sure will have to deal with in the ensuing years is to what degree will we have to cross level, take some force out of the active force, put it in the guard, take some out of the guard and put it in the active force. That's something that will take years to analyze but it has implications for the guard, for example, bridging assets. Significant amount of bridging assets are in the guard that if you have -- are going to conduct a campaign in say, Europe, you would meet those assets much more quickly than we would have now so I think that will be something that comes forward but you can expect that the guard will to have be available to be part of rotational forces as they have for years now and/or second, we will have to collectively plan about potential cross leveling over time.

MR. O'HANLON: I want to add one more question of clarification while we are on this topic and also with the question about the men and women of the military. If we

are thinking about how you can be effective in hitting a target that's several hundred miles away, how do you figure out the right technology and where to base it because we have big problems with that right now and trying to figure out can we put them in Korea, can we put missiles in Japan? It occurs to me that if you are using Russia as your pacing function, you may be sort of letting yourself off the hook from that question because in Europe, we have a lot of close by allies and the corollary of this is what are the roles for the other military services, the Air Force and Navy and Marine Corps has viewed developed MDO.

We had an event here two years ago with an Air Force General who was working on MDO and I assume that sort of your closest sister service on this particular initiative at this moment but if you could speak to that, please?

GENERAL WESLEY: Yeah, a couple of points I'll make on that. First, you pointed out that we have a significant number of partners and allies, a part of NATO, et cetera, in the European continent and maybe you're begging the question, what about Indo-paycom theatre?

You know, concept have implications not just for material modernization like I said at training but also as implications for policy. It might orient and help orient our senior leaders on how would we want to better integrate in Indo-paycom theatre? It might have implications for the Indo-paycom commander and so it gives us an azimuth, an orientation on where is the right place to put weapons systems of that capability just to secure waterways, for example.

MR. O'HANLON: Great, thank you. So we -- the woman in the gold shirt in the fifth row, please?

MS. DORMUND: Good morning, thank you. I am Kaitlyn Dormund, I work for Improbable Technology Company. My question is in AI augmenting decision making, how much does that come into the planning versus operational phases and how will the

Army put AI through its paces before being used in an operational way?

GENERAL WESLEY: Let me start with the way we have done business the last 30 years. We have prided ourselves in the joint force and within the Army that we do very well at synchronizing a battle field up front. Usually, if you look at an operations plan, you know, I campaign that it might be an inch, two inches thick, you know? With very specific synchronization requirements. Synchronization is absolutely imperative but if one of the challenges you could argue we've had in the last 30 years is we haven't exercised that approach with a peer adversary where the opponent gets a vote and the very finely tuned synchronized plan starts to break apart, then what?

And what we are saying with artificial intelligence is the ability to augment the right adjustments to our decision making based on the influence or impact of an adversary.

So to your question, where do we see artificial intelligence fitting in? I can imagine that artificial intelligence will give us the ability to do dynamic air space control where you are changing air space management in near real time. That's in the operational fight.

I can imagine a targeting sequence, a pristine targeting sequence that you have originally planned for being changed while an aircraft is in flight so that -- to your questions, I think it's near real time. It is in the operational fight and we need to be able to exercise it there. Now, how do you do that and how do you test that? I think frankly that there are AI companies already testing that in air space management in the civilian air sector, for example. You can start to see how that would be helpful as we go forward but it would definitely be something that we would want to exercise a lot, yes.

MR. O'HANLON: Gentleman in the green shirt. Then I'll go here and I'll work towards the back.

MR. NANG: Hi, my name is Sang Wi Nang, I am working for the Radio Free Asia for Korean Service. I have a question about the long range (inaudible) fire. I remember you mentioned the North Korean Missile can be the reason why the US Army developed a long range of recent fire so can you tell me how relevant long range fire to deal with tech like the North Korean missile.

GENERAL WESLEY: I don't think it's germane to North Korea. As I said earlier, we looked at our pacing threat and we are looking at both Russia and China on this problem and Iskandur was mentioned earlier. These are capabilities that have only gotten better so we are not investing in long range precision fires because of North Korea. We are investing in long range precision fires because it's the problem that we have to solve as we go forward and we project into the future. So that's why I laid out the problem right out front but I wouldn't say it's unique to the North Korea problem.

MR. O'HANLON: Over here, please.

MS. HARRIS: Hi, my name is Melissa Harris. I am a tech reporter with MeriTalk. You said that developing AI was one of the sort of pain points for Army Futures Command so I was wondering what strategies you guys were taking to tackle those challenges and get where you want to be with those AI capabilities?

GENERAL WESLEY: Thank you for that question. We put Army Futures Command down in Austin, Texas. I think there was a lot of discussion on that. Why did the Army do that? One of the reasons we went down to Austin is although we have a long history and a long legacy of using -- leveraging our own labs to develop technology that have been just exceedingly effective over time. If you look at the investment of the United States Government, it's inverted over the last 40 years. In the 1960s two thirds of R and D dollars came out of the US government. Now it's inverted and only one third whereas two thirds are coming out of the private sector, universities, et cetera.

So why would we abridge our ability to be exposed to that kind of science? So we knew we had to get away from just our labs and so we leveraged our labs, they do great work but we also want to be in the space where young kids with laptops at Starbucks are developing ideas so we embedded ourselves down there in Austin as a startup community and an ecosystem that has these incubators and progressive thinking.

We have this organization called Army applications lab and it's an incubator down there in Austin called capital factory so that we can be bumping into, smashing into young people with innovative ideas. Now to your question specifically, one of the branches of Army applications lab is the AI task force at Carnegie Melon University, one of their premiere universities where we talk about artificial intelligence so as we explore this on our own, we can be rubbing shoulders with those that think about this every day. So we stood up -- our artificial intelligence task force and we put it at Carnegie Melon and those are the two key things I want you to take away on that.

MR. O'HANLON: Excellent. Let's go up to my friend in the baseball cap.

MR. HORWITZ: Hi, I am Elian Hurwitz and I want to thank -- I worked for the World Bank for 20 years and I worked in the Intelligence Committee. I want to thank both of you for a very good presentation.

In the New York Times on September 10th, there was an article by the general counsel of NSA, Glenn Gerstaw who said in his article: "Technology is about to upend our national security infrastructure." He further said: "It is on an unprecedented scale and pace of technological change will outpace our ability to effectively adapt to it and he ended by speaking about quantum computing and encryption. He was giving a lot of credit to foreign adversaries so I'd like to hear both of your comments on that, please.

GENERAL WESLEY: So I am not a physicist and I want to caveat that right up front. I am not as much even a technologist. I am a war fighter and I am soldier but we

are cognizant, sir, of those things and I think that is imperative. One of the things we talk about in the concept is that as a nation -- this is why I have said earlier that collaboration with industry will be imperative. The ability to harden and that's probably not even a good term because you are really going to hermetically seal the vulnerabilities of the United States.

Rather, I would -- you would probably be better to say constant vigilance to protect the homeland and even that's a generic term but we expect that we will be targeted immediately as we move out of our motor pools in the continental United States, that power grids and rail systems all will be vulnerable.

I considered a story a few years ago -- a guy named Mike Vitale in Washington State. He was a subcontractor. He had a company with 15 people. You might have read about this story and he was an excavator, nothing sophisticated and he found that his website had been hacked and the FBI paid a visit to him and he said why would anybody want to hack me? And he goes not only were you hacked but you were likely hacked by the Russians and Mike Vitale is in there outside Eugene, Oregon saying why is my 15 man company being hacked by the Russians?

What they found was that he was the soft underbelly to a power company up in the Pacific Northwest and that upwards of 70 percent of the power companies throughout the continental US had been exposed in a similar way by virtue of that effort. Now that's Mike Vitale with a 15 man company so when I say vigilance and hardened, that's a whole of nation effort that we'll have to get after and I think that's what the gentleman was talking about and a Clarian call that this is not something that is an Army problem.

This is a national effort that we all will have to be involved in. I hope that answered the question, sir.

MR. O'HANLON: That's great. I am going to keep going to the back for a

little bit. Let's see, we've got I think these two up here. One in front of the other. Maybe take them together and come back to General Wesley.

MR. BAYNART: Hi, Matt Baynart, Defense Daily. I just have a quick two-parter on the updated modernization strategy. When do you expect that to be released? We've heard around mid-October, do you expect that to be the case and then on MDO, last fall, the 1.5 concept was detailed so how far along is the Army towards MDO 2.0 and what kind of specifics are you working through in order to get to that point.

MR. O'HANLON: Do you want to take that right now or -- go ahead.

MR. SWEELEY: Thank you. Jake Sweeley from the Elliot School of International Affairs. My question, sir, is does the scope of futures command include doctrinal aspects and structural changes to the Army as an organization or is it mostly focused on technology, expecting those aspects of reform to come after.

GENERAL WESLEY: Thank you. I'll start at the first question and come to yours. On the aspect of -- when will the Army modernization strategy be released? I think Chief of Staff has gone public and said that October is a good timeline, no later than the end of the year so he has bracketed it and all the senior leaders are reviewing it now and making some minor adjustments to it as we go forward. When we go to MDO 1.5, we -- let me just give a little bit of background. As Mike O'Hanlon mentioned earlier, we published MDB, Multi-Domain Battle with the Air Force about two years ago.

We called that 1.0 and we always said to the Air Force that late in 2019, we would publish a 2.0 but in the interim, what the Army decided was you know what? We don't want to wait to do that. We need inside the Army, because we were so aggressively pursuing the modernization, we needed that azimuth out there so we published what is now called the Army and Multi-Domain Operations 2028 and again, nicknamed it 1.5.

We don't want to presuppose what the other services will do. What we are

saying in our document is this is what we think the Army has to do, leaving open ended the plugs for the other services. 2.0 is not a new version of MDO. What we are describing 2.0 as is as the initiative with the services to create a joint concept and this is really important. It won't be, I don't think distinct but it's the collaboration with the other services because multi-domain operations, by virtue of the intuitive understanding, you're taking all domains, it has to be a joint concept so it's the next level that we have to get to in order to have a common view across the services and right now, we are in the midst of that with the other services.

I think that we'll have -- I think General Millie has said this, the Secretary of Defense has said that we need a joint concept so you'll see that as priority work I think in the next year or so.

As far -- the next question, doctrinal. Remember what I said upfront. Any modernization has to be comprehensive. It's not just material. In fact, you get greater gains in changing how you fight than any kind of technology you bring to the battlefield so what General Murray has been charged with doing is modernizing the Army across the entire future force modernization enterprise, which includes doctrine, organization, material, training, leader development, policy, facilities, all those things. He has been given the charge to hold all those enterprises accountable for modernization.

Now, TRADOC might do a lot of the writing on the doctrine but in terms of choreographing the pathway and describing what is need, General Murray and Army Futures Command leads that choreography.

MR. O'HANLON: Over here, to the gentleman next to the window, please.

MR. NAWEEM: Thank you for this panel. This is great. Chris Naweem. I am a contributor for News Max on the Hill. Former Army enlisted. General, in your mind, when it comes to acquisitions, how do you balance sort of the need to be on schedule on the one hand with the need for competition for a highly visible franchise program like the

optionally manned flight vehicle. So kind of staying on schedule versus the need for real competition in terms of the acquisition context.

GENERAL WESLEY: Yeah, I think that's -- first of all, I think we are growing in this space. Both those on the hill who have given us increased authorities and those in the services who are learning how to leverage those authorities, right. But first of all, I would say we are all accountable to a board of directors and cost schedule and performance is imperative so that we honor the resources that the American people give to us.

So that is a very important side of the tension that you described. What we think we need to do is to make sure we are leveraging all of the authorities that Congress has given us before we go ask for more. So as we stood up Army Futures Command, one of the goals were to leverage those first, make sure our house is order before we go back to the Hill.

I would argue that we are still learning on how to be agile and using those exceptional authorities and I can also imagine in the future, as we get good at that, the services may come back and say hey we need to be more agile because our adversaries don't have some of the constraints that we do.

As I said, important constraints but we need to make sure those don't hinder our ability to enhance our national security apparatus on behalf of the people that fund us.

MR. O'HANLON: Thank you. Woman here on the sixth row please.

MS. MITCHELL: Thank you general for coming today, I greatly appreciate it. Lauren Mitchell, I am an intelligence officer in the reserves and also coming from recorded future of our intelligence platform and also servicing open source intelligence. My question, you know we've been focusing on offensive strategy in the physical space but I'd like to hear how you assess the modernization strategy as far as defensive in the cyber

realm where adversaries have actually been able to hit us at home whether it be involving our election infrastructure and being able to -- (inaudible) in the larger cyberspace as well. Thank you.

GENERAL WESLEY: So I am admittedly not an expert on cyber realm but I will say this, you mentioned that we talked a lot about the offensive nature. I want to be clear on something. The United States, and our lands and our culture, we are on a strategic defense. We like the status quo because we want the ability to continue to thrive within the culture and ethical norms that we hold dear, right?

But what I described that seems offensive is the very aggressive nature with which you have to be in a defense and the degree to which we demonstrate that we are very capable to defeat a Feta-Compley attack forces our adversary to recalculate any intentions they may have had such that you change their behavior, which by definition is a defensive action.

In the cyber space, you know this is interesting, we -- culturally because it grew up in the intel community, I think there is a great docudrama called Zero Day and it talks about the fact that we don't talk a lot about what we do in cyber because of the origins and the DNA that it comes from. That's something I think we are all coming to grips with and a degree to which you communicate your intentions, not online what we did in the nuclear era but I am going to defer to cyber command and them to talk in the details and what is the realm of possible but it is one of the domains that will be fundamental and it has to be incorporated at the operational level and I believe that the authorities to leverage it will be necessary to move down to the tactical and operational level.

MR. O'HANLON: We have time for one more. Actually let's take -- we'll go to my friend here in the second row and then the gentleman all the way back. I think that'll have to be it if that's okay.

MR. NICHOLSON: Sure, excellent presentation. George Nicholson with the global special operations forces foundation. A little over a year ago, the come down Marine Corps General Millard of the Atlantic Council stood up and said the biggest threat the Marines face in the future is our dependence upon GPS and SatCom and he gave an example of being in Afghanistan asking one of his Marines to show him on a map and he said "We don't use maps anymore." Well they've gone down the path of pulling the plug and -- a week later, I was over at the Simpson Center and Admiral Richardson said they have the same problem in the Navy.

But along those same lines, one individual who worked here at Brookings is now over at New America is Pete Singer and his book, Ghost Fleet, a Commandant in the Marine Corps said that is absolutely required reading for every one of my Marine Officers and as a matter of fact he's been working with Marine Futures. Your comment?

MR. O'HANLON: And we'll take the last one together if you don't mind.

MR. TENANT: Hey, sir, hello. My name is Paul Tenant, I am the Army Attaché for the UK. It's good to see you again, General. I'd just like to ask you about transitions and I think we in uniform -- I'd hesitate to speak for the US Army but certainly in the British Army, we tend to think about phases somewhat in silos. The term phase 0 was difficult in this respect and as we think about left of the bang and right to the bang, I think we are also in danger of doing the same. What I'd like to ask you, therefore is when those transitions are probably going to start happening faster and faster and affecting a lower and lower tactical level at speed and probably working in both directions, how are you managing your balance of investment decisions on smoothing the bumps of those transitions?

GENERAL WESLEY: Okay, thank you. I am going to take that one first and then I'll come back to yours. So I don't know that we can smooth the bumps of the transitions. I think we have to condition ourselves to get used to the bumps so just a

different way of looking at the problem because we culturally have a very clean distinction in our mind between competition and conflict or peace and war.

It comes from our Judeo-Christian roots and we believe that there is this very high threshold for war. I said we are not a war fighting people and so -- but that distinction is so branded in our mind. It starts with the Constitution. Our laws, our policies, our behaviors that to mobilize takes a significant threshold that we have to cross whereas what we are describing is adversaries that are operating in a competition space all the time and if we don't get into that space that's very gray and ambiguous, with authorities to compete, what you will see is we will lose market share over time.

So I am saying not to smooth the bumps but to get used to the bumps is going to be I think the challenge that we face. Just yesterday, we were talking about what happened in Saudi Arabia and the attacks in those oil fields. We are days away from that incident and there are still debates as to who the originator was.

So the problem we face when an adversary is in play, you have to ask yourself will there be a situation where you have a Feta-Compley outcome and you don't even know who initiated it. That's problematic as long as we keep very clear distinctions between what is peace and war, competition and conflict.

To the question, sir, you asked. I don't know that it's our biggest problem but here's the thing. I don't think it can be either/or. It's got to be both/and. My son just graduated from basic training at Fort Leavenworth, thank you very much. I am very happy about that and I asked him. I said did you learn how to use a compass and he was very excited and proud that he was able to read a map and use a compass but that doesn't mean, at the same time, that we abandon the great virtues of POSNAV or GPS or all these things.

I believe it's a both/and and we don't have the luxury to avoid either of them.

MR. O'HANLON: Thank you, General. Please join me in thanking General Wesley. (Applause)

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